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Derivative Strategies for Market Randomness

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I. Introduction:

The returns of the stock market are very important to the theories of Asset pricing, allocation and risk management of investments. However, we assume that positive index returns means positive trade returns. One very important point missed out by retail investors is that the stock market can be traded with a variety of views. Option strategies allow a trader to take multiple views on the market, and hence many ways to make profits. One of the biggest advantages of options is the ability to create a direction neutral strategy. Strategies like Straddle,Strangle, Butterfly, Iron Condor, etc. are considered Direction neutral strategies. Out of these, the Reverse Iron Condor has proven to be the best strategy for a long term investor. It has a limited loss, if the market remains within a range and a limited profit if the market goes out of a certain range. However, the probability of market moving out of a small range is very high. Moreover, the time period for this movement is one month. In one month, markets generally move as it is its basic characteristic.

Observing past data of Nifty, one can infer that the market moves in a random fashion. It can also be statistically proved to be random. The efficient market hypothesis aims to find whether the market is in the weak form (random), or the strong form. However, from a retail investor's perspective, it does not matter which EMH the market is following. The market changes from weak, semi-strong and the strong form as randomly as any other random variable.

The reverse iron condor has a good success ratio in Indian markets as it is not concerned with the direction of the market but only with volatility. It does not mean that the reverse iron condor is a fool proof strategy. It does make a loss when markets are not volatile, which also is a frequent event.

Hence progressive investment strategy can work best in such a scenario as it has the ability to reverse back all the losses. Progression can be of any type; Fibonacci or Martingale. Progressive investment will definitely reap profits.

There has been a lot of research on progressive investment strategies. However, most of them are based on gambling events of roulette or flipping of coins, where each event is independent of the previous. Stock markets are generally random and there is no empirical evidence that each period is dependent on any previous periods. However, it is not completely independent. This allows the progressive investment strategy to work in the stock markets. The Gambler's Fallacy may not be applicable in the continuous trading of reverse iron condor option strategy.

The concept of Derivatives as a tradable instrument is still in its nascent stages in India. Derivatives are still regarded as complex instruments which are understood only by few people in the industry. However, the truth is that derivatives are simple contracts and easy to understand. The complexity comes in deriving a fair price for these derivative instruments. For retail participants, pricing should never be an issue and therefore they do not need to get into the complexities of fair price. They should always have a view on the underlying asset price and trade derivatives at the current market price. With the advent of algorithmic trading, which will trade for risk free arbitrages, the retail participants can safely assume that the current price is the fair price at this point in time.

Various studies have been done on Derivatives, specifically Options to understand the pricing of these instruments. However much more needs to be done in this field. Most of the research has been on the theoretical aspect of modeling and mispricing, and very little research work is done on practically employing strategies and its implementation for profit from a retail investor's point of view.

II. Literature Review

Fama (1991) classifies market efficiency into three forms - weak, semi-strong and strong. In its weak form efficiency, equity returns are not serially correlated and have a constant mean. Market is semi-strong efficient if stock prices reflect any new publicly available information instantaneously. There are no undervalued or overvalued securities and thus, trading rules are incapable of producing superior returns. The strong form efficiency suggests that security prices reflect all available information, even private information. Insiders profit from trading on information not already incorporated into prices. Hence the strong form does not hold in a world with an uneven playing field. Studies testing market efficiency in emerging markets are few. Poshakwale (1996) showed that Indian stock market was weak form inefficient; he used daily BSE index data for the period 1987 to 1994. Barua (1987), Chan, Gup and Pan (1997) observed that the major Asian markets were weak form and inefficient.

Debashish and Mitra(2008) examined the lead and lag relationship between the cash markets and derivatives markets and concluded that derivatives markets led the cash markets. However other studies like Pradhan and Bhatt (2009), Johansen (1988), Basdas (2009) have observed that in many countries spot markets lead the derivatives markets.

Trennepohl and Dukes (1981) is among the earliest empirical research to test option writing and buying return.

Merton, Scholes and Gladstein (1978) concluded that certain option strategies like fully covered writing strategy have been successful in changing the patterns of returns and are not reproducible by any simple strategy of combining stocks with fixed income securities. Covered strategy is a combination of the stock with its respective option. The strategy can give good returns in the long run compared to the traditional approach of long term investing in stocks.

Green and Figlewski (1999) examine the forecast of stock volatility and return of option writing. They find that at-the-money stock index calls have a high probability of producing large losses, with larger losses for longer time to maturity. Writing options with a delta hedge reduces the writer's risk exposure compared to naked writing, but risk is still considerable. The practice of option writing has increased steadily in recent years, and some practitioners apply relatively complicated hedging techniques to manage writing risks (Collins; 2007).

Research done by Bondarenko (2003), Jones (2006), and Coval and Shumway (2001), examine the returns of strategies that involve puts and calls. They report that strategies involving put options offer good returns and that put options are more expensive than calls of comparable distance from the money. Yet, little research has been done to explore the returns from combinations, straddles, and collars.

Maheshwari (2013) concludes that market participants majorly retail participants may not be experiencing efficient markets, due to lack of education, liquidity and transaction charges. This is true in the current scenario as retail traders and investors view options as a highly leveraged instrument apt for speculating.

III. Research Methodology:

The study will use secondary data on Nifty index stock options and check the results of Reverse Iron condor options strategy. The strategy has a high probability of success. However it is accompanied with a non-favorable risk to reward ratio. The study thus aims to study the risk scenarios and their frequency of impacting the total profits from the period of January 2008 to December 2014. Secondary data of futures and options prices are used from the website www.nseindia.com

At the start of every current expiry month, a reverse iron condor strategy will be initiated and it will be squared off at the expiry price. The futures price on the opening of the current month will be considered as the spot price to determine the at the money (ATM) strike price. The combination in the Iron condor would be to buy an ATM straddle and sell a two hundred points away strangle. In other words it is also a combination of a bull call spread and a bear put spread. This iron condor will be a combination of two vertical debit spreads originating at ATM.

To determine the ATM, the opening future price is taken as the reference point. The future price is rounded off to the nearest 100th and that point is considered as the ATM.

The quantity of shares traded has to be in lots. 75 shares is one lot, which is also the minimum quantity required to be traded. The strategy begins with one lot and the quantity is changed in a progressive manner. If a particular month has a loss, the consecutive month will have the quantity doubled. If there is a profit in a particular month, the consecutive month will start with one lot.

The investment in the strategy is taken as the maximum amount of the cumulative net debit in the entire 84 months. The margins that are needed to execute the trade are not considered as the investment, since margin requirements are just deposits and can be paid in collateral or fixed deposits. The net debit has to be paid in cash and hence considered as investment.

Objective of the study:

The main objective of this research study is to give retail investors a chance to profit from options trading. The study uses basic tools which retail investors can understand, rather than using complex models. The study will do a research on actual market prices and device a strategy which will be implementable by retail participants. Options' trading is perceived as complex and is considered as a tool for only professionals. This study will focus on simplicity of trading option strategies.

Significance of the study:

Market participants who have tried trading in options find it very difficult to understand the factors affecting the option prices. They find the behavior of option prices very complex and therefore avoid trading these instruments. This study will try to explain the behavior of option prices in the simplest of forms for a common man to understand and trade based on the option price behavior.

Assumptions and limitations of the research

- The research is a secondary data research based on the data fromJanuary 2008 to December 2014available on www.nseindia.com
- The prices are taken from the bhav copy. There may be a chance of discrepancy in the prices listed in the bhav copies.
- 84 months data is enough to cover most of the practical scenarios that happen in capital markets.
- The transaction costs, even though a very important part in trading, are not considered here, as the trades are required only on the beginning and expiry days. Hence the amount can be considered insignificant. Moreover, these costs are subject to negotiation and vary from broker to broker.

Back Testing Data and Analysis

Nifty options are considered in the study as they are most widely traded and the most liquid. Everyexpiry month is tabulated based on its start date. The open is the open price on the last Friday of the previous calendar month which also is the starting of the new expiry. Since the strategy has to initiate at the ATM, the strike which is closest to the open price is considered open strike. The close is the settlement price on the date of expiry. The difference between the close price and the open strike is the intrinsic value that will remain on the last day.

IV. Analysis and Findings

This strategy attracts margins since there are short options. However, the margin investments are not considered as investments as margins are allowed to be in the form of any collateral. Hence only the cash outflow is considered as the new investment.

Out of the 84 months data (Table 1.), in the back testing experiment, it is observed that
No. of profit months: 57
No. of loss months: 27
Maximum cumulative loss at any point: 0
Maximum Investment: Rs. 9,675/-
Net Profit at end of 84 months: Rs.2,08,554/-

Looking at the data, one can observe that the market has behaved in quite random manner. In some months there had been extreme movements and in some there was no movement at all. In these 84 months, markets have behaved in all risk scenarios and hence it can be called an optimum sample for capital markets.

V. Conclusion:

- ✓ The reverse iron condor debit spread strategy is a very basic and easy to understand and implement options strategy.
- ✓ This strategy has proved to yield profits in the long run.
- ✓ Progressive investment strategy seems to work through this strategy in stock markets.
- ✓ Since the maximum profits and maximum losses are capped, the retail investor can take informed decisions.
- ✓ The study is done with a mechanical approach and still the yield is quite high. If human aspects such as intellectual analysis, news flows, exits at the right time before expiry, etc. are used, the net profit can be considerably increased.

Scope and policy implications:

- This study can be used by brokers, exchanges and regulators to instill confidence among retail participants who are shy of exploring derivatives markets.
- Increased retail participation will result in much more mature markets and price discovery across all asset classes will improve.
- The study will also discourage unnecessary speculation and abuse of the excessive leverage inbuilt in derivative instruments like options.

Appendix:

Table 1:

Date	Open	Expiry Date Price	Diff of Expiry Close and open strike	Open Strike Price	Call Spread	Put Spread	Call net P/l	Put net P/l	Net P/L Each month	Qty.	Net P/L	Cum P/L
28-Dec-07	6,080	5,133	-967	6,100	61	68	-61	132	71	75	5,348	5,348
1-Feb-08	5,121	5,272	172	5,100	79	101	93	-101	-8	75	-611	4,736
29-Feb-08	5,225	4,829	-371	5,200	60	84	-60	116	56	150	8,415	13,151
28-Mar-08	4,885	5,002	102	4,900	93	76	9	-76	-67	75	-5,014	8,137
25-Apr-08	5,021	4,841	-159	5,000	94	82	-94	77	-17	150	-2,580	5,558
30-May-08	4,879	4,308	-592	4,900	90	60	-90	140	50	300	14,970	20,528
27-Jun-08	4,136	4,332	232	4,100	88	55	112	-55	57	75	4,275	24,803
1-Aug-08	4,270	4,218	-82	4,300	84	67	-84	15	-69	75	-5,190	19,613
29-Aug-08	4,291	4,115	-185	4,300	67	71	-67	114	47	150	7,042	26,655
26-Sep-08	4,109	2,689	-1,411	4,100	80	70	-80	130	50	75	3,716	30,371
30-Oct-08	2,825	2,758	-142	2,900	116	75	-116	67	-49	75	-3,694	26,678
28-Nov-08	2,701	2,913	213	2,700	85	80	115	-80	35	150	5,190	31,868
26-Dec-08	2,973	2,824	-176	3,000	77	55	-77	121	44	75	3,330	35,198
30-Jan-09	2,770	2,786	-14	2,800	74	75	-74	-60	-135	75	-10,095	25,103
27-Feb-09	2,759	3,083	283	2,800	72	80	128	-80	48	150	7,163	32,265
27-Mar-09	3,071	3,474	374	3,100	83	74	117	-74	43	75	3,210	35,475
04-May-09	3,621	4,337	737	3,600	86	90	114	-90	24	75	1,793	37,268
29-May-09	4,365	4,242	-158	4,400	77	89	-77	69	-8	75	-581	36,686
26-Jun-09	4,299	4,571	271	4,300	80	90	120	-90	30	150	4,500	41,186
31-Jul-09	4,631	4,688	88	4,600	86	89	2	-89	-87	75	-6,499	34,688
28-Aug-09	4,705	4,987	287	4,700	85	77	115	-77	37	150	5,573	40,260
25-Sep-09	4,958	4,750	-250	5,000	85	78	-85	122	37	75	2,775	43,035
30-Oct-09	4,845	5,005	205	4,800	82	61	118	-61	57	75	4,241	47,276
27-Nov-09	4,918	5,202	302	4,900	87	72	113	-72	41	75	3,053	50,329
01-Jan-10	5,225	4,867	-333	5,200	86	65	-86	135	50	75	3,731	54,060
29-Jan-10	4,826	4,860	60	4,800	68	100	-8	-100	-108	75	-8,092	45,968
26-Feb-10	4,867	5,261	361	4,900	103	75	97	-75	22	150	3,300	49,268
26-Mar-10	5,276	5,254	-46	5,300	65	67	-65	-21	-86	75	-6,461	42,806
30-Apr-10	5,263	5,004	-296	5,300	68	66	-68	134	66	150	9,878	52,684
28-May-10	5,025	5,321	321	5,000	100	59	100	-59	41	75	3,105	55,789
25-Jun-10	5,298	5,409	109	5,300	93	57	16	-57	-41	75	-3,053	52,736
30-Jul-10	5,394	5,478	78	5,400	79	60	-1	-60	-61	150	-9,150	43,586
27-Aug-10	5,460	6,030	530	5,500	66	67	134	-67	68	300	20,250	63,836
01-Oct-10	6,065	5,988	-112	6,100	67	95	-67	17	-50	75	-3,716	60,120
29-Oct-10	6,050	5,800	-300	6,100	66	73	-66	127	61	150	9,188	69,308
26-Nov-10	5,845	6,103	303	5,800	93	58	107	-58	48	75	3,623	72,930
31-Dec-10	6,131	5,604	-496	6,100	88	56	-88	144	57	75	4,238	77,168
28-Jan-11	5,617	5,265	-335	5,600	92	76	-92	124	32	75	2,404	79,571
25-Feb-11	5,327	5,824	524	5,300	84	85	116	-85	31	75	2,295	81,866
01-Apr-11	5,865	5,784	-116	5,900	80	74	-80	42	-38	75	-2,835	79,031
29-Apr-11	5,789	5,402	-398	5,800	87	74	-87	126	39	150	5,888	84,919
27-May-11	5,415	5,644	244	5,400	78	67	122	-67	55	75	4,106	89,025
01-Jul-11	5,700	5,493	-207	5,700	69	70	-69	130	61	75	4,575	93,600
29-Jul-11	5,479	4,842	-658	5,500	71	67	-71	133	62	75	4,650	98,250
26-Aug-11	4,855	5,019	119	4,900	81	81	38	-81	-42	75	-3,158	95,092
30-Sep-11	4,999	5,182	182	5,000	92	63	90	-63	26	150	3,975	99,067
26-Oct-11	5,241	4,755	-445	5,200	98	55	-98	145	47	75	3,536	1,02,604
25-Nov-11	4,750	4,649	-151	4,800	75	81	-75	71	-5	75	-341	1,02,263
30-Dec-11	4,689	5,161	461	4,700	73	70	127	-70	57	150	8,498	1,10,760
27-Jan-12	5,201	5,488	288	5,200	62	62	138	-62	76	75	5,693	1,16,453
24-Feb-12	5,532	5,177	-323	5,500	94	62	-94	138	45	75	3,364	1,19,816
30-Mar-12	5,246	5,187	-13	5,200	95	57	-95	-44	-139	75	-10,395	1,09,421
27-Apr-12	5,200	4,916	-284	5,200	92	62	-92	138	46	150	6,968	1,16,389
01-Jun-12	4,908	5,151	251	4,900	89	65	111	-65	47	75	3,491	1,19,880

29-Jun-12	5,215	5,043	-157	5,200	63	62	-63	95	32	75	2,366	1,22,246
27-Jul-12	5,144	5,307	207	5,100	80	59	120	-59	61	75	4,568	1,26,814
31-Aug-12	5,321	5,653	353	5,300	76	56	124	-56	67	75	5,059	1,31,873
28-Sep-12	5,714	5,705	5	5,700	69	61	-64	-61	-126	75	-9,420	1,22,453
26-Oct-12	5,711	5,828	128	5,700	75	59	53	-59	-6	150	-832	1,21,620
30-Nov-12	5,891	5,874	-26	5,900	61	63	-61	-37	-98	300	-29,460	92,160
28-Dec-12	5,932	6,037	137	5,900	80	56	56	-56	-0	600	-60	92,100
01-Feb-13	6,068	5,692	-408	6,100	56	67	-56	133	77	600	46,230	1,38,330
01-Mar-13	5,718	5,677	-24	5,700	68	65	-68	-41	-109	75	-8,201	1,30,129
05-Apr-13	5,716	5,910	210	5,700	70	55	130	-55	75	150	11,237	1,41,365
26-Apr-13	5,919	6,124	224	5,900	73	55	127	-55	72	75	5,400	1,46,765
31-May-13	6,119	5,684	-416	6,100	72	57	-72	143	71	75	5,303	1,52,068
28-Jun-13	5,761	5,907	107	5,800	62	66	45	-66	-20	75	-1,519	1,50,549
26-Jul-13	5,955	5,417	-583	6,000	69	78	-69	122	53	150	7,913	1,58,462
30-Aug-13	5,400	5,884	484	5,400	85	65	115	-65	51	75	3,788	1,62,249
27-Sep-13	5,951	6,295	295	6,000	81	76	119	-76	43	75	3,210	1,65,459
01-Nov-13	6,315	6,087	-213	6,300	78	65	-78	135	57	75	4,290	1,69,749
29-Nov-13	6,162	6,279	79	6,200	73	84	7	-84	-78	75	-5,824	1,63,925
27-Dec-13	6,340	6,069	-231	6,300	67	59	-67	141	74	150	11,085	1,75,010
31-Jan-14	6,115	6,239	139	6,100	74	61	65	-61	4	75	296	1,75,307
28-Feb-14	6,265	6,646	346	6,300	60	56	140	-56	84	75	6,308	1,81,614
28-Mar-14	6,708	6,837	137	6,700	74	65	63	-65	-2	75	-157	1,81,457
25-Apr-14	6,900	7,239	339	6,900	92	86	108	-86	22	150	3,285	1,84,742
30-May-14	7,275	7,498	198	7,300	67	76	131	-76	55	75	4,132	1,88,874
27-Jun-14	7,551	7,724	124	7,600	69	89	55	-89	-34	75	-2,565	1,86,309
01-Aug-14	7,686	7,953	253	7,700	70	66	130	-66	64	150	9,570	1,95,879
01-Sep-14	8,021	7,902	-98	8,000	72	64	-72	34	-39	75	-2,899	1,92,980
26-Sep-14	7,956	8,167	167	8,000	68	62	99	-62	37	150	5,580	1,98,560
31-Oct-14	8,235	8,493	293	8,200	89	50	111	-50	61	75	4,601	2,03,162
28-Nov-14	8,576	8,183	-417	8,600	63	65	-63	135	72	75	5,393	2,08,554

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